



AFCTN Test Report 94-052

AFCTB-ID
93-104



Technical IGES Transfer

Using:



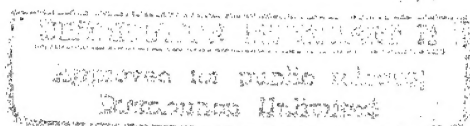
Computing Devices' Data



MIL-D-28000A (IGES)



Quick Short Test Report



23 November 1993

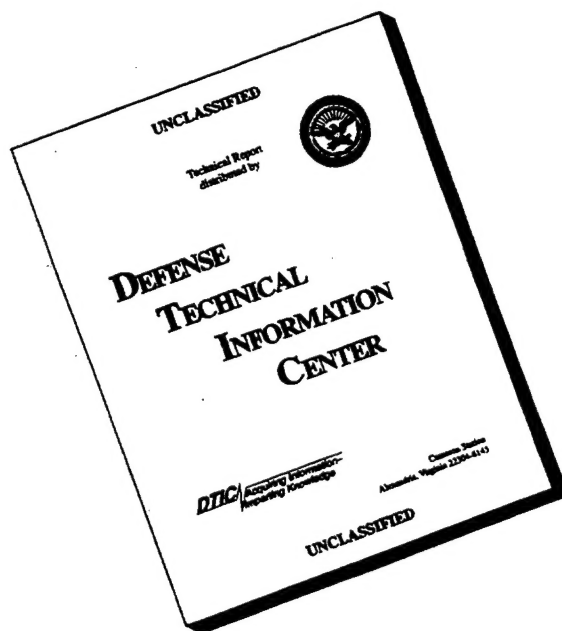
19960822 097



Prepared for:
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AFCTN Test Report
94-052

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93-104

Technical IGES Transfer
Using:
Computing Devices Company's Data
Supporting:
AGS Contract # DAAE/7-92-C-R047

MIL-D-28000A (IGES)

Quick Short Test Report

23 November 1993

Prepared By

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1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Computing Devices Company's interpretation and use of the CALS standards in transferring technical IGES data. Computing Devices used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff via an electronic transfer.

2. Test Parameters

Test Plan: AFCTB 93-104

Date of Evaluation: 23 November 1993

Evaluator: George Elwood
Air Force CALS Test Bed
Det 2 HQ ESC/AV-2P
4027 Colonel Glenn Hwy
Suite 300
Dayton OH 45431-1672

Data Originator: Dennis Lenard
Computing Devices Company
Dept 1609
PO BOX 8505
Ottawa Onterio K1G 3M9
Canada
(613) 596-7744

Data Description: Technical Manual Test
1 Document Declaration file
1 Initial Graphics Exchange Specification (IGES) file

Data Source System: 1840

HARDWARE Unknown

SOFTWARE Unknown

IGES

HARDWARE Unknown

SOFTWARE Unknown

Evaluation Tools Used:

MIL-STD-1840A (TAPE)

SUN 3/280

AFCTN Tapetool v1.2.10 UNIX

MIL-D-28000 (IGES)

Sun SparcStation 2

Carberry CADLeaf Plus v3.1

IGES Data Analysis (IDA) Parser/Verifier v92

IDA IGESView v3.05

Intergraph I/EMS v02.00.01.11

Intergraph I/CIGES v02.00.01.03

International TechneGroup Incorporated
(ITI) IGES/Works v1.4

SGI Indigo2

AUTODESK AutoCAD R12

Cadkey Cadkey v6.0

PC 486/50

AUTODESK AutoCAD v386 R12

AUTODESK AutoCAD v386 R11

Cadkey Cadkey v6.0

IDA IGESView Windows

Standards

Tested:

MIL-STD-1840A

MIL-D-28000A

3. 1840A Analysis

3.1 External Packaging

The files arrived at the Air Force CALS Test Bed (AFCTB) via an electronic transfer using the ftp host.

3.2 Transmission Envelope

The files received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

The tape formats were not available for testing because it was an electronic transfer.

3.2.2 Declaration and Header Fields

Seven errors and 25 warnings were found in the Document Declaration file and data file headers. No errors were reported in the Document Declaration File.

The header for file D001Q001 had the CALS header appended to the top of the file. Even though all of the information was found in the heading, Tapetool considered the entire header as only two blocks. Checking the provided header, "nl" characters were found. MIL-STD-1840A, para. 5.2.1.5 defines the header as being a fixed length record with a length of 80. The header records should not contain this character, but should have the remainder of the line padded with the "sp" character. When viewed the provided header looks correct, but does not provide the required breaks.

Shown on the following page is the top of the submitted IGES file with the CALS header. Note the "nl" characters and that most of the header information is included in the first record.

```

wpafb1# od -a D001Q001 |more
0000000  s  r  c  d  o  c  i  d  :  sp  2  5  3  9  8  3
0000020  sp nl d s t d o c i d :  sp  N  O  N  E
0000040  nl t x t f i l i d :  sp  N  O  N  E nl
0000060  f  i  g  i  d  :  sp  2  5  3  9  8  3 nl s r
0000100  c  g  p  h  :  sp  N  O  N  E nl d o c c l
0000120  s  :  sp  U  N  C  L  A  S  S  sp  sp  sp  sp  sp  sp
0000140  sp sp nl n o t e s :  sp  T  E  S  T  sp  F
0000160  O  R  sp  B  O  B  sp  P  A  T  T  O  N  sp  O  R
0000200  sp  D  E  N  N  I  S  sp  L  E  N  A  R  D  ,  sp
0000220  C  O  M  P  U  T  I  N  G  sp  D  E  V  I  C  E
0000240  S  ,  sp  6  1  3  -  5  9  6  -  7  7  4  4 nl
0000260  nl sp sp sp sp sp sp sp sp 0 sp f i l e (
0000300  s  )  sp  c  o  p  i  e  d nl C O N F O R
0000320  M  A  N  C  E  :  sp  T  h  i  s  sp  I  G  E  S
0000340  sp f i l e sp c o n f o r m s sp t
0000360  o  sp  t  h  e  sp  M  I  L  -  D  -  2  8  0  0
0000400  0  A  sp  C  l  a  s  s  sp  I  I  sp  sp  sp  sp  sp

```

Shown below is a corrected CALS header. This file was created using the AFCTN Tapetool utility on a DOS based system. Note that no "nl" characters are present. Also note that the records break on 60 byte divisors.

```

od -a AFTBTEST | more
0000000  s  r  c  d  o  c  i  d  :  sp  C  A  L  S  sp  H
0000020  E  A  D  E  R  sp  T  E  S  T  sp  sp  sp  sp  sp  sp
0000040  sp sp sp sp sp sp sp sp sp sp sp sp sp sp sp sp
*
0000120  d  s  t  d  o  c  i  d  :  sp  C  A  L  S  sp  H
0000140  E  A  D  E  R  sp  T  E  S  T  sp  sp  sp  sp  sp  sp
0000160  sp sp sp sp sp sp sp sp sp sp sp sp sp sp sp sp
*
0000240  t  x  t  f  i  l  i  d  :  sp  N  O  N  E  sp  sp
0000260  sp sp sp sp sp sp sp sp sp sp sp sp sp sp sp sp
*
0000360  f  i  g  i  d  :  sp  2  5  3  9  8  3  sp  sp  sp
0000400  sp sp sp sp sp sp sp sp sp sp sp sp sp sp sp sp
*
0000500  s  r  c  g  p  h  :  sp  N  O  N  E  sp  sp  sp  sp
0000520  sp sp sp sp sp sp sp sp sp sp sp sp sp sp sp sp
*
0000620  d  o  c  c  l  s  :  sp  U  N  C  L  A  S  S  I
0000640  F  I  E  D  sp  sp  sp  sp  sp  sp  sp  sp  sp  sp
0000660  sp sp sp sp sp sp sp sp sp sp sp sp sp sp sp sp
*
0000740  n  o  t  e  s  :  sp  N  O  N  E  sp  sp  sp  sp  sp

```

Because of errors in the IGES header file, this portion of the file set does not meet the CALS MIL-STD-1840A requirements.

4. IGES Analysis

The transfer contained one IGES file. This file was evaluated using IDA's parser/verifier set for CALS Class II. The utility reported no CALS errors. However, 25 IGES warnings were issued. Three cautions were issued for entity 112, the parametric spline curve. It was recommended that entities 126 (b-spline) or 128 (b-spline surface) be used instead. The entire log file is included in the Appendix of this report.

The Start Section was checked and the required information defined in MIL-D-28000A was found.

The AFCTB has several tools for viewing IGES files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The file was converted using a utility available within the AFCTB, with no reported errors. The resulting file was read into Island Graphics' *IslandDraw*, displayed and printed without a reported error. Only the left image was displayed on the screen. All text appeared to be located correctly. Two sets of vertical dimension lines with leader lines and arrowheads were displayed in the upper left corner of the file. Some text overlap was noted in the notes in the upper left corner of the image.

The file was read using AUTODESK's *AutoCAD R12* with translator version 5.1. No problems were noted during this procedure. See the Import Log in the Appendix of this report. When viewed only the left image was displayed. All text appeared to be positioned correctly. Two vertical lines were noted in the upper left corner. No leader lines or arrowheads were displayed.

The file was read into another software available within the AFCTB, without a reported error. The image displayed with both view and drawing. All entities appear to be present. It was noted that some entities were hidden. These were displayed and found to be reference marks located to the far right and a set of three located in the middle of the left image. A set of two vertical lines were noted in the upper left corner of the left image. These appear to be dimension lines with leader lines and arrow heads. Because of printing limitations within the AFCTB, the complete image could not be printed.

The file was converted using Cadkey's *ig2c* utility. The resulting file was read into Cadkey's *Cadkey*, displayed and printed. When displayed, two drawings were displayed side-by-side. A detailed review of the drawings showed that some parts were displaced on the left image. Parts of the drawing information that should be displayed in the lower right corner are located in the center of the image. Other miscellaneous lines noted were probably part of this displacement. Also noted as missing was text that should be in the drawing boxes, located in the upper right corner of the left image, and parts of the notes in the upper left corner, including the tolerance information.

The file was read into Carberry's *CADLeaf* software without a reported error. The image had to be forced to all black in order to view the entire file. When viewed only one image was displayed on the screen. The information displayed on the screen indicated that one view and one drawing were processed. A detailed review of the hard copy, and screen display, showed that all text was located correctly. Two sets of vertical lines, assumed to be dimension lines, with leader lines and arrowheads were displayed in the upper left corner. They do not appear to belong in this location nor on the second view located to the right.

The file was read using IDA's *IGESView* and *IGESView for Windows*. No problems were encountered during this process. The displayed image was left of the two displayed with some systems. The software reported the existence of one drawing and one view. Both selections displayed the same information. Two sets of vertical lines were noted in the upper left corner of the image. Picking these entities it was found that they relate to the dimension and tolerance information shown. They were also found to reside on a different level.

The IGES file was converted using Intergraph's *I/CIGES* utility without a reported error. The resulting file was read into Intergraph's *I/EMS* and displayed. The AFCTB currently does not have the ability to print these files. When the file was displayed, both images were displayed. All text appeared to be correctly positioned. The two sets of vertical lines located in the upper left corner, in most of the other applications, did not display. It was noted that the line entities of the images used a heavy line thickness. This resulted in loss of information in some areas. This carried over into some of the text information.

The file was read using ITI's *IGESWorks* without a reported error. The file was displayed and printed. Both views were displayed on the screen. All text appeared to be positioned correctly. Two sets of vertical lines with leader lines and arrowheads were noted in the upper left corner of the image. The IGES Validator reported some note entities without text in the parameter section. See the Appendix for this log.

The IGES file was converted using still another software package available within the AFCTB, without a reported error. The resulting file was read, displayed and printed. When displayed, the left image was complete. The right image displayed only the arrowheads. All displayed text appeared to be located correctly. Two sets of vertical lines with leader lines and arrowheads were noted in the upper left corner of the image.

No CALS errors or warnings were issued for the IGES file. The file meets the CALS MIL-D-28000A specification.

5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were included in the test.

6. Raster Analysis

No Raster files were include in this test.

7. CGM Analysis

No Computer Graphics Metafile (CGM) files were included in this test.

8. Conclusions and Recommendations

The electronic transfer of the IGES file from Computing Devices Company had a critical error in the CALS header. The header file was not in the correct format, which resulted in the information being read as only two records. The header problem resulted in the transfer set not meeting the CALS MIL-STD-1840A requirements.

The IGES files meet the CALS MIL-D-28000A specification.

Because of the error in the CALS header on the IGES file, the data set does not meet the CALS requirements as defined in MIL-STD-1840A.

9. Appendix A - Tapetool Report Logs

9.1 Tape Catalog

CALS Test Network Catalog Evaluation - Version 1.2; Release 10 (C)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information
ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
for Information Interchange
ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Tue Nov 23 13:43:22 1993

MIL-STD-1840A File Catalog

File Set Directory: /cals/u1210/Set037

Page:
1

File Name	File Type	Record Format/ Selected/ Length	Block Length/Total
Extracted			

D001	Document Declaration	D/00256	02048/000000
Extracted			
D001Q001	IGES	F/00080	02000/000000
Extracted			

Catalog Process terminated normally.

9.2 Tape File Set Validation Log

CALS Test Network File Set Evaluation - Version 1.2; Release 10 (C)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Tue Nov 23 13:43:22 1993

MIL-STD-1840A File Set Evaluation Log

File Set: Set037

Found file: D001

Extracting Document Declaration Header Records...

Evaluating Document Declaration Header Records...

srcsys: BOB PATTON, COMPUTING DEVICES COMPANY, DEPT. 1609, PO BOX
8508, OTTAWA, ONT., CANADA, K1G 3M9

srcdocid: 253983

srcrelid: NONE

chglvl: ORIGINAL

dteisu: 19931101/1600:00

dstsys: AFCTB

dstdocid: NONE

dstrelid: NONE

dtetrn: 19931101/1600:00

dlvacc: NONE

filcnt: Q1

ttlcls: UNCLASS

doccls: UNCLASS

doctyp: ENGINEERING DRAWING, CLASS II IGES

docttl: OUTLINE AND INSTALLATION FIRE CONTROL COMPUTER, FCC2-1

Found file: D001Q001

Extracting IGES Header Records...

Evaluating IGES Header Records...

srcdocid: 253983

dstdocid: NONE

txtfilid: NONE

figid: 253983

srcgph: NONE

doccl

s: UNCLASS

notes: TEST FOR BOB PATTON OR DENNIS LENARD, COMPUTING DEVICE

*** ERROR (MIL-STD-1840A; 5.1.4) - Invalid IGES header field name. Expected => dstdocid:
*** NOTE - The value in the header field may not be evaluated.
*** NOTE - Correction made in new IGES Header File.

DEVICE

*** ERROR (MIL-STD-1840A; 5.1.4) - Colon missing in IGES header field.
*** NOTE - The header record will be given the value NONE.
*** NOTE - Correction made in new IGES Header File.

o the MIL-D-28000A Class II S 1
subset (Engineering Draw

*** ERROR (MIL-STD-1840A; 5.1.4) - Colon missing in IGES header field.
*** NOTE - The header record will be given the value NONE.
*** NOTE - Correction made in new IGES Header File.

ings) dated December 19, 1990. S 2

*** ERROR (MIL-STD-1840A; 5.1.4) - Colon missing in IGES header field.
*** NOTE - The header record will be given the value NONE.
*** NOTE - Correction made in new IGES Header File.

S 3

DOD-STD-100 and MIL-T-31000 part an

*** ERROR (MIL-STD-1840A; 5.1.4) - Colon missing in IGES header field.
*** NOTE - The header record will be given the value NONE.
*** NOTE - Correction made in new IGES Header File.

d drawing identification: S 4

*** ERROR (MIL-STD-1840A; 5.1.4) - Invalid IGES header field name. Expected => notes:
*** NOTE - The value in the header field may not be evaluated.
*** ERROR (MIL-STD-1840A; 5.1.4) - Value contains leading spaces.
*** NOTE - Correction made in new IGES Header File.

7 error(s), 0 warning(s), and 12 note(s) were encountered
in IGES File D001Q001.
Saving IGES Header File: D001Q001_HDR
Saving IGES Data File: D001Q001_IGS

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

A total of 7 error(s), 0 warning(s), and 12 note(s) were encountered in Document D001.

A grand total of 7 error(s), 0 warning(s), and 12 note(s) were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

10. Appendix B - Detailed IGES Analysis

10.1 File D001Q001

10.1.1 Parser/Verifier Log

```
*****
****  IGES PARSER/VERIFIER  ****
****      MARCH 1993      ****
****  IGES Data Analysis  ****
****      (708) 344-1815  ****
*****
```

Input file is q001.igs

Checking conformance to CALS Class II (MIL-D-28000A 2/10/92)

Today is November 23, 1993 2:17 PM

```
*****
****  CHECK FILE SYNTAX  ****
*****
```

Section	Records
Start	24
Global	4
Directory	6052 (3026 Entities)
Parameter	7290
Terminate	1

No syntax errors detected.

```
*****
****  SUMMARY AND STATISTICS  ****
*****
```

*** File and Product Name Information ***

```
File name from sender      =
':NVEC.E0120.E647445632S0517D19930715T185000.F2'
File creation Date.Time    = '930730.073832'
Model change Date.Time     = ''
Author                     = '<UNKNOWN>'
```

Department = '<UNKNOWN>'
Product name from sender = '253983'
Destination product name = '253983'

*** Parameter Delimiters ***

Delimiter = ','
Terminator = ';'

*** Originating System Data ***

System ID = 'ICEM SYSTEMS - ICEM IGES'
Preprocessor version = '3.0.1'
Specification version = 5 (ASME/ANSI Y14.26M-1987)

*** Precision levels ***

Integer bits = 32
Floating point - Exponent = 38 Mantissa = 6
Double precision - Exponent = 308 Mantissa = 15

*** Global Model Data ***

Model scale = 1.0000E+00
Unit flag = 1
Units = 'INCH'
Line weights = 4
Maximum line thickness = 2.755906E-02
Minimum line thickness = 6.889764E-03
Granularity = 1.000000E-04
Maximum coordinate = 1.838243E+02

Drafting standard applicable to original data is not specified.

*** Status Flag Summary ***

Blank status:	Visible	3000
	Blanked	26
Independence:	Independent	2757
	Physically Subordinate	269
	Logically Subordinate	0
	Totally Subordinate	0
Entity use:	Geometry	2368
	Annotation	650
	Definition	3
	Other	5

Logical/Positional	0
2D parametric	0
Construction geometry	0
Not Specified	0

Hierarchy:	Structure DE applies	2924
	Subordinate DE applies	102
	Hierarchy property applies	0
	Not Specified	0

*** Entity Occurrence Counts ***

Entity	Form	Level	Count	Type
-----	----	-----	-----	----
100	0	0	419	Circular arc
100	0	1	11	
100	0	2	12	
102	0	1	6	Composite curve
102	0	2	8	
106	12	2	102	Copious data - Piecewise linear string(3D linear path)
106	21	1	20	Centerline through circle centers
106	31	1	4	Section lines - General use, iron, brick, stone masonry
106	37	2	26	Section lines - Lead, zinc, magnesium, insulation
106	40	1	62	Witness line
* 108	0	0	4	Plane, Unbounded
110	0	0	1122	Line
110	0	1	319	
110	0	2	513	
110	0	10	8	
112	0	0	3	Parametric spline curve
116	0	1	7	Point
124	0	0	3	Transformation matrix
206	0	1	1	Diameter dimension
210	0	1	9	General label
210	0	11	2	
212	0	0	12	General note
212	0	1	97	
212	0	2	144	
212	0	11	2	
214	2	1	72	Leader arrow - Triangle
214	2	11	2	
216	0	1	31	Linear dimension
404	0	1	1	Drawing

406	15	0	1	Property - Name
406	16	0	1	Property - Drawing size
406	17	0	1	Property - Drawing units
410	0	1	1	View - Orthographic parallel

* Indicates a type or form not defined in the IGES version specified.

*** Entity Count by Level ***

Level	Count
0	1566
1	641
2	805
10	8
11	6

*** Labeling Information ***

100% of the entities are labeled.

Unlabeled 0

Label	Count	Label	Count	Label	Count
POINT	7	DRAWING	1	PROPERTY	3
VIEW	1	MATRIX	3	PLANE	4
COMPCURV	14	LINE	1962	LABEL	11
GNOTE	255	LEADER	74	LINDIM	31
COP DATA	112	DIADIM	1	CIRC ARC	442
3DSPLINE	3	2DSPLINE	102		

*** Line Fonts Used in Data ***

100	102	104	106	108	110	112	114	
-	-	-	-	4	-	-	-	Undefined
433	14	-	194	-	1901	3	-	Solid
1	-	-	-	-	44	-	-	Dashed
8	-	-	-	-	11	-	-	Phantom
-	-	-	20	-	6	-	-	Center-line
-	-	-	-	-	-	-	-	Dotted
-	-	-	-	-	-	-	-	User defined
116	118	120	122	124	125	126	128	
-	-	-	-	3	-	-	-	Undefined
7	-	-	-	-	-	-	-	Solid

<<<<< PART OF LOG FILE REMOVED HERE >>>>>

*** Line Widths Used in Data ***

Weight	Count	Width
Defaulted	7	(0.0069)
1	1578	(0.0069)
3	936	(0.0207)
2	505	(0.0138)

*** Colors Used in Data ***

Defaulted	10
White	3016

***** ENTITY ANALYSIS *****

*** Entity type: 100

*** Entity type: 102

*** Entity type: 106

CAUTION 2331: Use of section lines (Form 31-38) is not recommended at D 829.

NITPICK 2076: Entity does not have Annotation flag set at D 829.

CAUTION 2331: Use of section lines (Form 31-38) is not recommended at D 831.

NITPICK 2076: Entity does not have Annotation flag set at D 831.

CAUTION 2331: Messages suppressed

NITPICK 2076: Messages regarding entity use (annotation) suppressed.

*** Entity type: 108

WARNING 2082: Form zero is not defined in the IGES version specified at D 27.

WARNING 2492: Undefined line font value (0) specified for D 27.

WARNING 2082: Form zero is not defined in the IGES version specified at D 29.

WARNING 2492: Undefined line font value (0) specified for D 29.

WARNING 2082: Form zero is not defined in the IGES version specified at D 31.

WARNING 2492: Undefined line font value (0) specified for D 31.

WARNING 2082: Form zero is not defined in the IGES version specified at D
33.

WARNING 2492: Undefined line font value (0) specified for D 33.

*** Entity type: 110

-- 1962 lines averaging 1.294297E+00 units --

*** Entity type: 112

CAUTION 4055: Use of the 126 and 128 in CALS Class II is encouraged instead
of

the use of the 112 and 114 at D 2463.

CAUTION 4055: Use of the 126 and 128 in CALS Class II is encouraged instead
of

the use of the 112 and 114 at D 2465.

CAUTION 4055: Use of the 126 and 128 in CALS Class II is encouraged instead
of

the use of the 112 and 114 at D 3247.

*** Entity type: 116

*** Entity type: 124

WARNING 2492: Undefined line font value (0) specified for D 25.

WARNING 2492: Undefined line font value (0) specified for D 53.

WARNING 2492: Undefined line font value (0) specified for D 5947.

3 transformation matrices, 0 non-zero translations.

*** Entity type: 206

*** Entity type: 210

*** Entity type: 212

WARNING 2086: Invalid font (1003) referenced by string 3 in general note at D
55.

WARNING 2086: Invalid font (1003) referenced by string 1 in general note at D
73.

WARNING 2086: Invalid font (1003) referenced by string 1 in general note at D
427.

WARNING 2086: Invalid font (1003) referenced by string 1 in general note at D
439.

WARNING 2086: Invalid font (1003) referenced by string 1 in general note at D
451.

WARNING 2181: No text in General note at D 1383.

WARNING 2181: No text in General note at D 1517.

WARNING 2181: No text in General note at D 1905.
WARNING 2181: No text in General note at D 3205.
WARNING 2181: No text in General note at D 5867.
WARNING 2181: No text in General note at D 5879.
363 text strings in data file.
Average text aspect ratio in file is 0.9840475.
Minimum text aspect ratio in file is 0.8000000.
Maximum text aspect ratio in file is 1.0942308.

FONTS USED IN FILE

FONT	COUNT	NAME
1	347	Default ASCII Style
1001	2	Symbol Font 1
1002	9	Symbol Font 2
1003	5	Drafting Font

*** Entity type: 214

Average arrow aspect ratio in file is 3.0000000.
Minimum arrow aspect ratio in file is 3.0000000.
Maximum arrow aspect ratio in file is 3.0000000.

*** Entity type: 216

*** Entity type: 404

Drawing at D 15 contains 1 views.
NITPICK 2289: View (D 23) is not logically subordinate to drawing at D 15.
Drawing at D 15 contains 0 annotation entities.

*** Entity type: 406

WARNING 2492: Undefined line font value (0) specified for D 17.
WARNING 2492: Undefined line font value (0) specified for D 19.
WARNING 2492: Undefined line font value (0) specified for D 21.

*** Entity type: 410

NITPICK 2073: Entity use flag must be 3 for View entity at D 23.
Scale of view at D 23 is 2.108434E-01.
Orthographic View entity at D 23 has 4 clipping planes specified.
XMIN = -25.501 XMAX = 43.270
YMIN = -18.687 YMAX = 31.705
ZMIN = Not Set ZMAX = Not Set

*** Message Summary ***

2008: 4 Invalid form numbers.
2010: 6 Missing or invalid data.
2011: 1 Invalid subordinate relationships.
2013: 5 Data out of defined range.
2016: 31 Invalid entity use flag.
2038: 10 Invalid Line font values.
4000: 3 Miscellaneous CALS messages

*** Error Summary ***

0 fatal errors
0 severe errors
0 errors
25 warnings
33 cautions
32 nitpicks
0 notes

*** End of Analysis of q001.igs ***

10.1.2 Parser Log - AutoCAD R12

Title: IGESIN Journal (v5.1 Nov 05 1992)

=====

File: C:/TMP/Q001.xli

Date: Tue, Nov 23, 1993

Time: 15:54:53

=====

EVALUATION VERSION -- NOT FOR RESALE

Translator S/N: 117-10075750

Translating from IGES file: C:/TMP/Q001.IGS

to AutoCAD Drawing: C:/TMP/Q001.dwg

=====

Options obtained from: C:/ACAD/SUPPORT/CALS1.OPT

Options Description: Configuration file for CALS Class I

Curves Approximated to Tolerance of 0.01

Surfaces Approximated to Tolerance of 0.01

Text Font/Style mapping:

IGES Text font	Style Name	ACAD Font
0	SYMBOL0	iges0
1	STANDARD	txt
2	LEROY	txt
3	FUTURA	txt
6	COMP80	txt
12	GOTHICE	gothice
13	GOTHICI	gothici
14	ROMANS	romans
17	ROMANT	romant
18	ROMAND	romand
19	OCR	txt
1001	SYMBOL1	iges1001
1002	SYMBOL2	iges1002
1003	SYMBOL3	iges1003
2001	KANJI	bigfont

IGES Linefont/AutoCAD Linetype mapping

IGES Line Font	AutoCAD linetype	Shape file
0	BYLAYER	
1	CONTINUOUS	
2	DASHED	acad.lin

3	PHANTOM	acad.lin
4	CENTER	acad.lin
5	DOT	acad.lin

=====

Parse phase

*** Warning (IEVM_ZERO_STRING_212) ***
(DE 1383, TF 212:0) The number of text strings equals zero, the number of text strings must be greater than zero.

*** Warning (IEVM_ZERO_STRING_212) ***
(DE 1517, TF 212:0) The number of text strings equals zero, the number of text strings must be greater than zero.

*** Warning (IEVM_ZERO_STRING_212) ***
(DE 1905, TF 212:0) The number of text strings equals zero, the number of text strings must be greater than zero.

*** Warning (IEVM_ZERO_STRING_212) ***
(DE 3205, TF 212:0) The number of text strings equals zero, the number of text strings must be greater than zero.

*** Warning (IEVM_ZERO_STRING_212) ***
(DE 5867, TF 212:0) The number of text strings equals zero, the number of text strings must be greater than zero.

*** Warning (IEVM_ZERO_STRING_212) ***
(DE 5879, TF 212:0) The number of text strings equals zero, the number of text strings must be greater than zero.

=====

Start Section:

CONFORMANCE: This IGES file conforms to the MIL-D-28000A Class II subset (Engineering Drawings) dated December 19, 1990.

DOD-STD-100 and MIL-T-31000 part and drawing identification:

Revision letters:

Performing organization:

Date of the ASME Y14.26M file pre-processing:

Contract Number:

Intended drawing size letter:

Number of drawing sheets in the file:

Data organization method with contents of each level:

IGES/Works Version v1.4.0 Subset Generator

IGES FILE DATA SOURCE = DDN PART

ICEM PART NAME =

253983

ICEM PART SHEET NUMBER = 1

Global Section:

Parameter Delimiter: ,
Record Delimiter: ;
Sending Product ID: 253983
File Name: :NVEC.E0120.E647445632S0517D19930715T185000.F2
System ID: ICEM SYSTEMS - ICEM IGES
Preprocessor Version: 3.0.1
Size of Integer: 32
Sgl. Precision Mag: 38
Sgl. Precision Sig: 6
Dbl. Precision Mag: 308
Dbl. Precision Sig: 15
Receiving Product ID: 253983
Model Space Scale: 1.000000
Unit Flag: 1
Unit String: INCH
of Line Weights: 4
Maximum Line Width: 0.027559
Creation Date: 07/30/93 07:38:32
Minimum Resolution: 0.000100
Maximum Coordinate: 183.824318
Author: <UNKNOWN>
Organization: <UNKNOWN>
IGES Version Number: 5
Drafting Standard: 0

Entity Summary:

Type	Form	Description	Count
100	0	Circular Arc	442
102	0	Composite Curve	14
106	12	Piecewise Linear Curve	102

106	21	Centerline Through Circle Centers	20
106	31	Section Entity	4
106	37	Section Entity	26
106	40	Witness Line	62
108	0	Plane (Unbounded)	4
110	0	Line	1962
112	0	Parametric Spline Curve	3
116	0	Point	7
124	0	Transformation Matrix	3
206	0	Diameter Dimension	1
210	0	General Label	11
212	0	General Note (Simple)	255
214	2	Leader (Triangle)	74
216	0	Linear dim - undetermined form	31
404	0	Drawing (form 0)	1
406	15	Property (Name)	1
406	16	Property (Drawing Size)	1
406	17	Property (Drawing Units)	1
410	0	View	1

Total 3026
=====

Translation phase

Drawing Entity (404 Form 0) at DE 15, with

name = 2,

size = 14.500000, 10.625000,

units = IN,

was processed in the AutoCAD drawing file: C:\TMP\Q001.dwg

IGES Entity Summary

Type	Form	Description	Count	Processed	Errors
100	0	Circular Arc	442	442	0
102	0	Composite Curve	14	14	0
106	12	Piecewise Linear Curve	102	102	0
106	21	Centerline Through Circle Centers	20	20	0
106	31	Section Entity	4	4	0
106	37	Section Entity	26	26	0
106	40	Witness Line	62	62	0
108	0	Plane (Unbounded)	4	4	0
110	0	Line	1880	1880	0
112	0	Parametric Spline Curve	3	3	0
116	0	Point	7	7	0
206	0	Diameter Dimension	1	1	0

210	0 General Label	11	11	0
212	0 General Note (Simple)	255	255	0
214	2 Leader (Triangle)	66	66	0
216	0 Linear dim - undetermined form	31	31	0
404	0 Drawing (form 0)	1	1	0
406	15 Property (Name)	1	1	0
406	16 Property (Drawing Size)	1	1	0
406	17 Property (Drawing Units)	1	1	0
410	0 View	1	1	0
		=====	=====	=====
Totals		2933	2933	0

AutoCAD Entity Summary

Entity	Created	Errors
=====	=====	=====
LINE	2648	0
POINT	7	0
CIRCLE	98	0
TEXT	279	0
ARC	344	0
INSERT	100	0
POLYLINE	120	0
DIMENSION	32	0
BLOCK	90	0
Totals	=====	=====
	3718	0

Error Summary:

The following message was issued 6 time(s)
The number of text strings equals zero, the number of text strings must be greater than zero.

Status: 0
Warning: 6
Error: 0
Fatal: 0

Elapsed Time:

Processor: 00:01:07
Clock: 00:01:08

10.1.3 IGESWork Validation Log

IGES/Works v1.4.1
International TechneGroup Incorporated
Validation Logfile

Date: November 24, 1993
Model: display_csl

***** Validation Parameters *****

TOLERANCE CONFIGURATION VALUES

```

ZERO_TOL = 1.000000e-13
MODEL_SPACE_PNT_COIN_TOL = 1.000000e-03
PARM_SPACE_PNT_COIN_TOL = 1.000000e-08
ISO_PARM_CURVE_TOL = 1.000000e-08
NON_CONV_TOL = 1.000000e-12
KNOT_COIN_TOL = 1.000000e-10
SAME_INTER_TOL = 1.000000e-12
PARALLEL_LINES_TOL = 1.000000e-07
ANGLE_COIN_TOL = 1.000000e-05
PNT_PROJ_TOL = 1.000000e-07
COLIN_TOL = 1.000000e-07
COPLANAR_TOL = 1.000000e-08
ZERO_NORMAL_TOL = 1.000000e-06
SAME_TANGENT_TOL = 1.000000e-04
SAME_CURVATURE_TOL = 1.000000e-04
SAME_DERIVATIVE_TOL = 1.000000e-03
MODEL_LINEAR_APPROX_TOL = 2.220446e-16

```

***** Entity Listing Before Validation *****

Count	Type	Form	Description
-----	----	----	-----
442	100	0	Circular Arc
14	102	0	Composite Curve
102	106	12	Piecewise Linear Curve
20	106	21	Centerline Through Circle Centers
4	106	31	Section Entity
26	106	37	Section Entity
62	106	40	Witness Line
4	108	0	Plane (Unbounded)
1962	110	0	Line
3	112	0	Parametric Spline Curve

7	116	0	Point
4	124	0	Transformation Matrix
1	206	0	Diameter Dimension
11	210	0	General Label
255	212	0	General Note (Simple)
74	214	2	Leader (Triangle)
31	216	0	Linear dim - undetermined form
1	404	0	Drawing (form 0)
1	406	15	Property (Name)
1	406	16	Property (Drawing Size)
1	406	17	Property (Drawing Units)
1	410	0	View

3027 - Number of entities in selection list

***** Entity Validation *****

*** Warning (IEVM_ZERO_STRING_212) ***

(DE 1383, TF 212:0) This General Note entity (212) specifies 0 strings in the Number of Text Strings (Index 1 of Parameter Data). The number of text strings must be greater than zero.

*** Warning (IEVM_ZERO_STRING_212) ***

(DE 1517, TF 212:0) This General Note entity (212) specifies 0 strings in the Number of Text Strings (Index 1 of Parameter Data). The number of text strings must be greater than zero.

*** Warning (IEVM_ZERO_STRING_212) ***

(DE 1905, TF 212:0) This General Note entity (212) specifies 0 strings in the Number of Text Strings (Index 1 of Parameter Data). The number of text strings must be greater than zero.

*** Warning (IEVM_ZERO_STRING_212) ***

(DE 3205, TF 212:0) This General Note entity (212) specifies 0 strings in the Number of Text Strings (Index 1 of Parameter Data). The number of text strings must be greater than zero.

*** Warning (IEVM_ZERO_STRING_212) ***

(DE 5867, TF 212:0) This General Note entity (212) specifies 0 strings in the Number of Text Strings (Index 1 of Parameter Data). The number of text strings must be greater than zero.

Entity Validation Summary:

Type	Form	Entity Count	Number Valid	Number of Corrected		Number of Uncorrected	
				Warnings	Errors	Warnings	Errors
Global Section		1	1	0	0	0	0
100	0	442	442	0	0	0	0
102	0	14	14	0	0	0	0
106	12	102	102	0	0	0	0
106	21	20	20	0	0	0	0
106	31	4	4	0	0	0	0
106	37	26	26	0	0	0	0
106	40	62	62	0	0	0	0
108	0	4	4	0	0	0	0
110	0	1962	1962	0	0	0	0
112	0	3	3	0	0	0	0
116	0	7	7	0	0	0	0
124	0	4	4	0	0	0	0
206	0	1	1	0	0	0	0
210	0	11	11	0	0	0	0
212	0	255	249	0	0	6	0
214	2	74	74	0	0	0	0
216	0	31	31	0	0	0	0
404	0	1	1	0	0	0	0
406	15	1	1	0	0	0	0
406	16	1	1	0	0	0	0
406	17	1	1	0	0	0	0
410	0	1	1	0	0	0	0
Totals:		3028	3022	0	0	6	0

The following message was issued and suppressed 1 times:

This General Note entity (212) specifies 0 strings in the Number of Text Strings (Index 1 of Parameter Data). The number of text strings must be greater than zero.

A message is suppressed when it has been issued more than 5 times. This value is controlled by the 'MAX_MESSAGE' configuration parameter.

NOTES:

- ① INDICATES APPROX CENTER OF GRAVITY.
- ② WEIGHT, 23/18 LBS MAX (10.5 KG) WITHOUT SHOCK ISOLATORS.
- ③ FOR MAIN ASSEMBLY, SEE DRAWING 253982.
- ④ ALL DIMENSIONS TO BE INCHES.
- ⑤ UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE:

MAX = 1	DOB
MAX = 1	[1.27]
MAX = 1	[0.1]
MAX = 1	[25.4]
MAX = 1	[0.6]
MAX = 1	[1.52]

FRONT VIEW

① INDICATES UNIT SHOCK ENVELOPE.

② SHOCK ISOLATORS ARE IDENTIFIED ON MAIN ASSEMBLY DRAWING. THESE ITEMS ARE SUPPLIED SEPARATELY.

③ SPARE CONNECTION LOCATION, IF ANY, BE SUPPLIED WITH BLANK CONNECTION SHELL.

④ SPRAY, HEX HEAD M8 X 1.25, 110mm LG.

⑤ P/N F.B.D. 72555338-100

⑥ P/N 7255338-140

⑦ VASHER FLAT 4 PLACES

⑧ GNDT SUPPLIED

⑨ MODIFICATION PLATE TOP EDGE

⑩ IDENTIFICATION PLATE TOP EDGE

⑪ PURGE POINT (CONDUCTIVE STEADY STATE) AIRS GROSS WEIGHT TYPE 1 SIZE 2

⑫ P/N 7255338-140

⑬ P/N 7255338-140

⑭ P/N 7255338-140

⑮ P/N 7255338-140

⑯ P/N 7255338-140

⑰ P/N 7255338-140

⑱ P/N 7255338-140

⑲ P/N 7255338-140

⑳ P/N 7255338-140

① P/N 7255338-140

② P/N 7255338-140

③ P/N 7255338-140

④ P/N 7255338-140

⑤ P/N 7255338-140

⑥ P/N 7255338-140

⑦ P/N 7255338-140

⑧ P/N 7255338-140

⑨ P/N 7255338-140

⑩ P/N 7255338-140

⑪ P/N 7255338-140

⑫ P/N 7255338-140

⑬ P/N 7255338-140

⑭ P/N 7255338-140

⑮ P/N 7255338-140

⑯ P/N 7255338-140

⑰ P/N 7255338-140

⑱ P/N 7255338-140

⑲ P/N 7255338-140

⑳ P/N 7255338-140

① P/N 7255338-140

② P/N 7255338-140

③ P/N 7255338-140

④ P/N 7255338-140

⑤ P/N 7255338-140

⑥ P/N 7255338-140

⑦ P/N 7255338-140

⑧ P/N 7255338-140

⑨ P/N 7255338-140

⑩ P/N 7255338-140

⑪ P/N 7255338-140

⑫ P/N 7255338-140

⑬ P/N 7255338-140

⑭ P/N 7255338-140

⑮ P/N 7255338-140

⑯ P/N 7255338-140

⑰ P/N 7255338-140

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⑲ P/N 7255338-140

⑳ P/N 7255338-140

① P/N 7255338-140

② P/N 7255338-140

③ P/N 7255338-140

④ P/N 7255338-140

⑤ P/N 7255338-140

⑥ P/N 7255338-140

⑦ P/N 7255338-140

⑧ P/N 7255338-140

⑨ P/N 7255338-140

⑩ P/N 7255338-140

⑪ P/N 7255338-140

⑫ P/N 7255338-140

⑬ P/N 7255338-140

⑭ P/N 7255338-140

⑮ P/N 7255338-140

⑯ P/N 7255338-140

⑰ P/N 7255338-140

⑱ P/N 7255338-140

⑲ P/N 7255338-140

⑳ P/N 7255338-140

① P/N 7255338-140

② P/N 7255338-140

③ P/N 7255338-140

④ P/N 7255338-140

⑤ P/N 7255338-140

⑥ P/N 7255338-140

⑦ P/N 7255338-140

⑧ P/N 7255338-140

⑨ P/N 7255338-140

⑩ P/N 7255338-140

⑪ P/N 7255338-140

⑫ P/N 7255338-140

⑬ P/N 7255338-140

⑭ P/N 7255338-140

⑮ P/N 7255338-140

⑯ P/N 7255338-140

⑰ P/N 7255338-140

⑱ P/N 7255338-140

⑲ P/N 7255338-140

⑳ P/N 7255338-140

① P/N 7255338-140

② P/N 7255338-140

③ P/N 7255338-140

④ P/N 7255338-140

⑤ P/N 7255338-140

⑥ P/N 7255338-140

⑦ P/N 7255338-140

⑧ P/N 7255338-140

⑨ P/N 7255338-140

⑩ P/N 7255338-140

⑪ P/N 7255338-140

⑫ P/N 7255338-140

⑬ P/N 7255338-140

⑭ P/N 7255338-140

⑮ P/N 7255338-140

⑯ P/N 7255338-140

⑰ P/N 7255338-140

⑱ P/N 7255338-140

⑲ P/N 7255338-140

⑳ P/N 7255338-140

① P/N 7255338-140

② P/N 7255338-140

③ P/N 7255338-140

④ P/N 7255338-140

⑤ P/N 7255338-140

⑥ P/N 7255338-140

⑦ P/N 7255338-140

⑧ P/N 7255338-140

⑨ P/N 7255338-140

⑩ P/N 7255338-140

⑪ P/N 7255338-140

⑫ P/N 7255338-140

⑬ P/N 7255338-140

⑭ P/N 7255338-140

⑮ P/N 7255338-140

⑯ P/N 7255338-140

⑰ P/N 7255338-140

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⑲ P/N 7255338-140

⑳ P/N 7255338-140

① P/N 7255338-140

② P/N 7255338-140

③ P/N 7255338-140

④ P/N 7255338-140

⑤ P/N 7255338-140

⑥ P/N 7255338-140

⑦ P/N 7255338-140

⑧ P/N 7255338-140

⑨ P/N 7255338-140

⑩ P/N 7255338-140

⑪ P/N 7255338-140

⑫ P/N 7255338-140

⑬ P/N 7255338-140

⑭ P/N 7255338-140

⑮ P/N 7255338-140

⑯ P/N 7255338-140

⑰ P/N 7255338-140

⑱ P/N 7255338-140

⑲ P/N 7255338-140

⑳ P/N 7255338-140

① P/N 7255338-140

② P/N 7255338-140

③ P/N 7255338-140

④ P/N 7255338-140

⑤ P/N 7255338-140

⑥ P/N 7255338-140

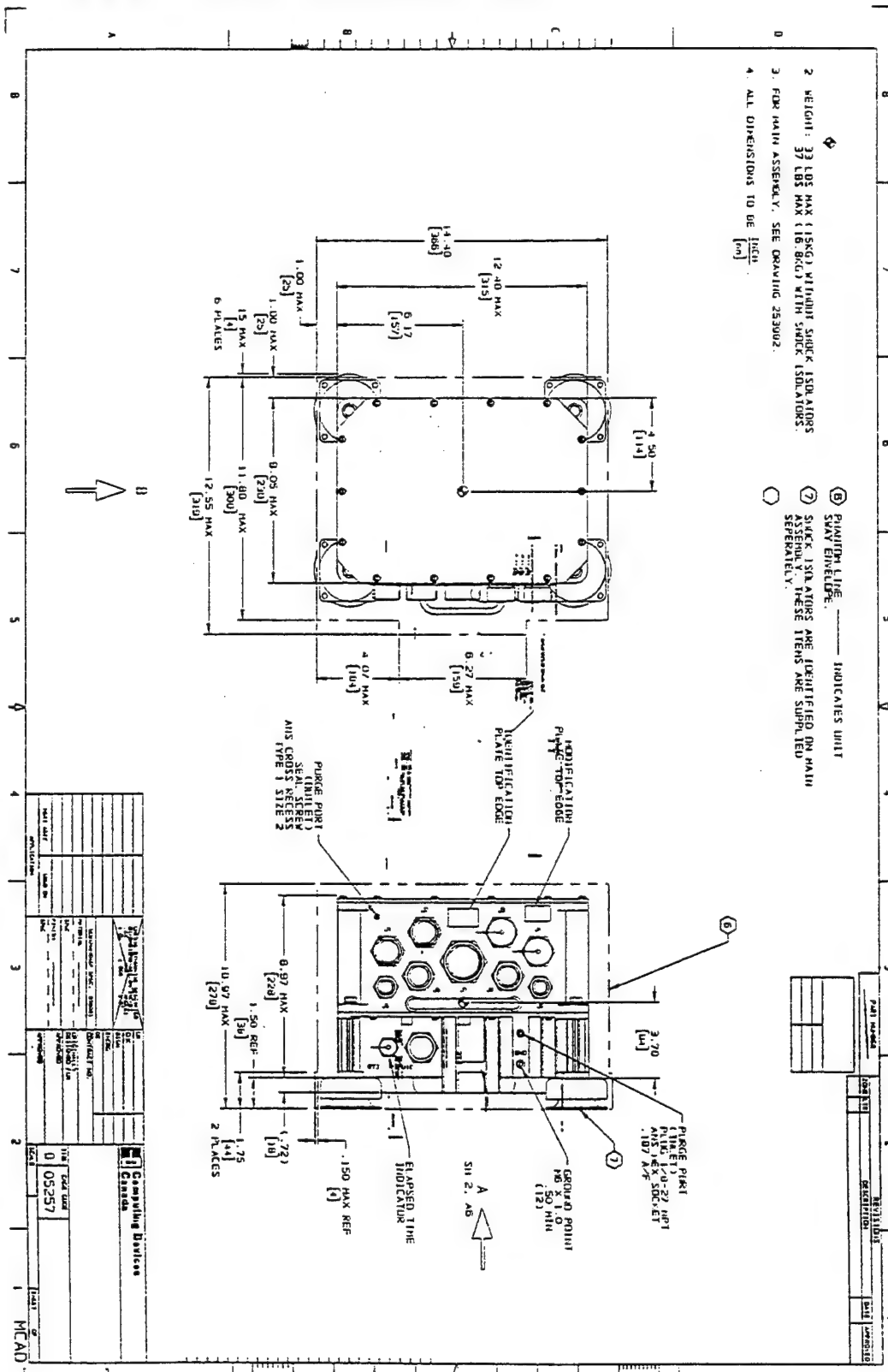
⑦ P/N 7255338-140

⑧ P/N 7255338-140

⑨ P/N 7255338-140

⑩ P/N 7255338-140

10.1.5 Output Cadkey v6.0 SGI - Left

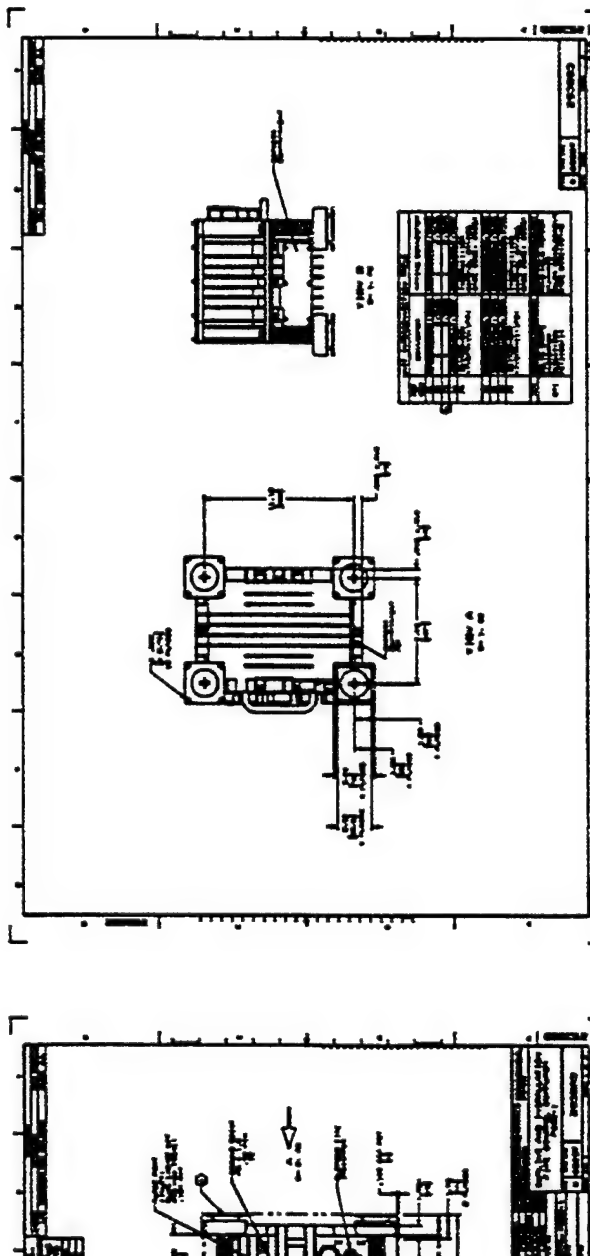


[illegible]

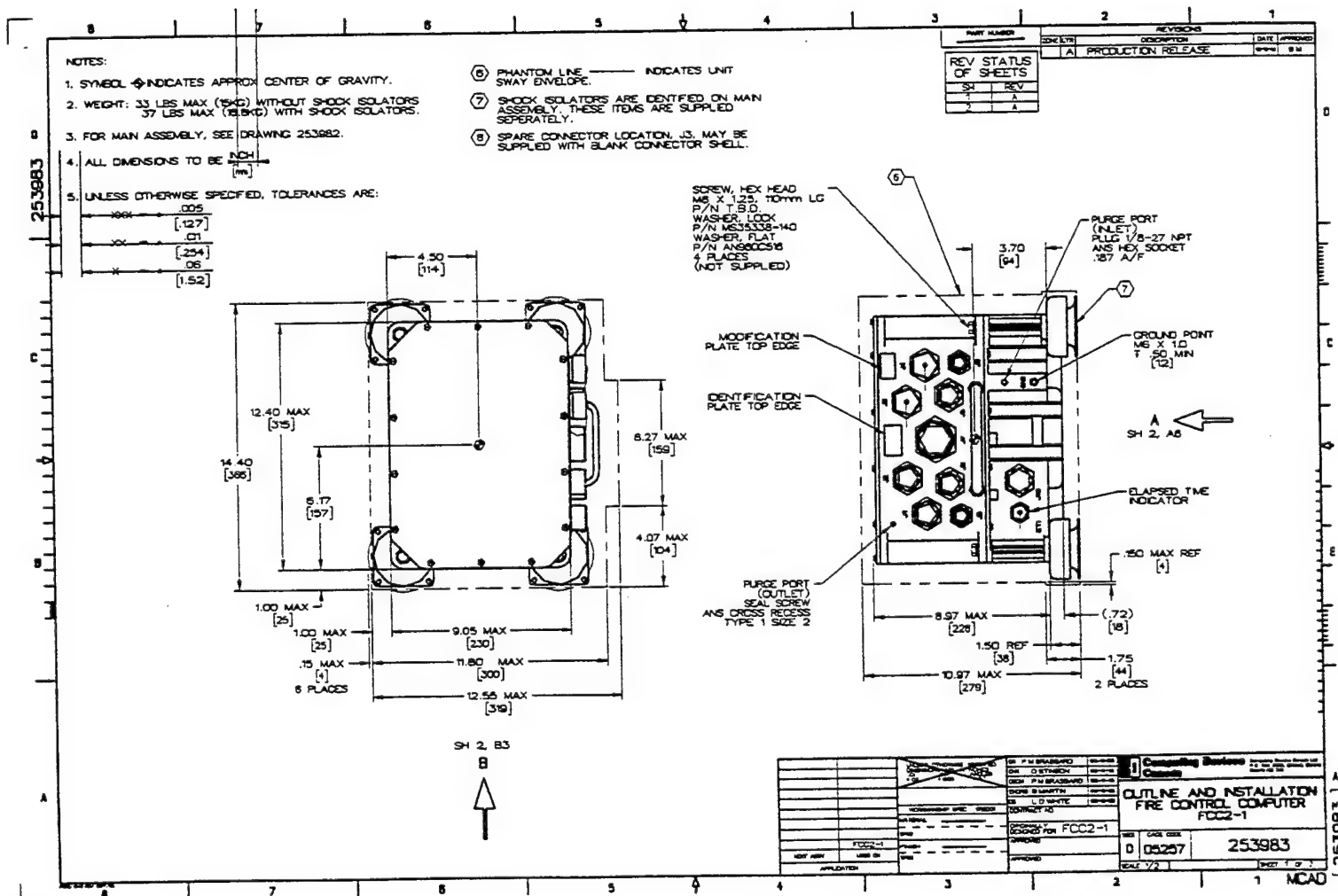
10.1.7 Output Cadleaf



10.1.8 Output Generic



10.1.9 Output IGESView



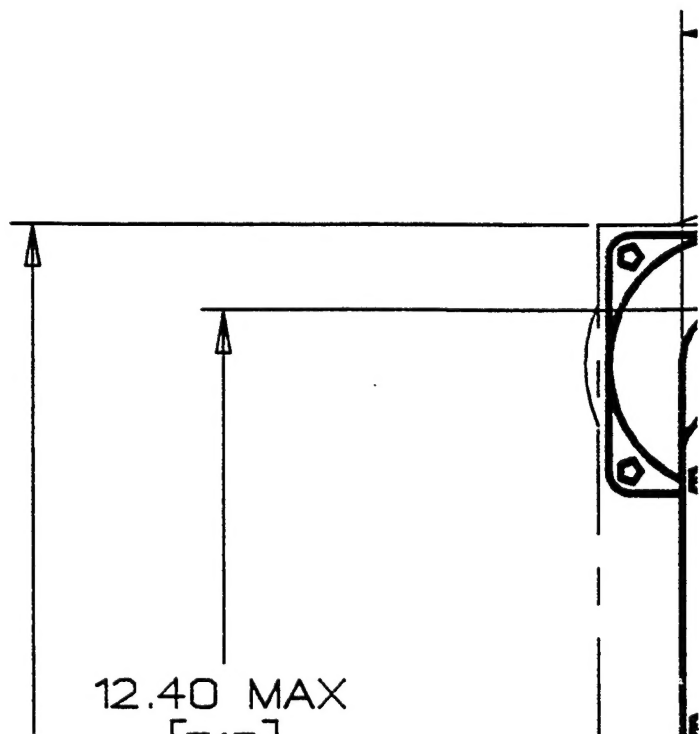
10.1.10 Output IGESView - Detail

3. FOR MAIN ASSEMBLY, SEE DRAWING 253982.

4. ALL DIMENSIONS TO BE $\frac{\text{INCH}}{[\text{mm}]}$

5. UNLESS OTHERWISE SPECIFIED, TOLERANCES ARE:

$\cdot XXX = \pm$	$.005$
	$[\cdot 127]$
$\cdot XX = \pm$	$.01$
	$[\cdot 254]$
$\cdot X = \pm$	$.06$
	$[1.52]$



10.1.11 Output IGESWorks

